Contents

1. Basics of Radiation Therapy Planning **1**

Gautam Saran

Aim of Radiotherapy *1*
Steps in Radiotherapy Planning *1*
Steps in Preplanning *2*
Planning Radiotherapy Treatment *3*
Steps in Treatment Delivery *10*

2. Head and Neck Cancer **14**

Vikash Kumar, Ashutosh Mukherji

General Principles and Outline of Management *14*
Prerequisite Investigations for Treatment Planning *16*
Indications for Postoperative Radiotherapy *16*
Oral Cavity *19*
Maxillary Antrum *24*
Nasopharynx *27*
Oropharynx *30*
Larynx *32*
Ear *41*
Minor Salivary Gland Tumors *44*
Unusual Nonepithelial Tumors *44*
Glomus Jugulare *48*

3. Gynecologic Tumors **50**

Kanika Sharma

Uterine Cancer *50*
Carcinoma Cervix *52*
Carcinoma Vagina *55*
Carcinoma Vulva *57*
Carcinoma Ovary *58*
Ovarian Ablation *61*
Malignancy During Pregnancy *62*

4. Carcinoma of Breast 64
Kanika Sharma
Role of Radiation Therapy *64*
Target Delineation *65*

5. Gastrointestinal Tract Tumors 68
Kanika Sharma
Esophagus *68*
Stomach *70*
Rectum *72*
Colon *76*
Anal Canal *77*
Pancreas *79*
Hepatobiliary *82*
Hepatocellular Carcinoma *82*
Gallbladder *83*
Cholangiocarcinoma *84*

6. Thoracic Tumors 86
Vikash Kumar
Lung Cancer *86*
Superior Sulcus Tumor *91*
Mesothelioma *93*
Thymoma *95*

7. Central Nervous System 96
Vikash Kumar
Supportive Care *96*
General Guidelines for Radiation Therapy *97*
Follow-up Protocol *104*

8. Central Nervous System Tumors in Children 105
Ashutosh Mukherji
Astrocytomas *106*
Ependymomas *111*

Choroid Plexus Tumors *112*
Craniopharyngiomas/Sellar Tumors *112*
Pineal Tumors *113*
Medulloblastomas *113*
Supratentorial Primitive Neuroectodermal Tumors *115*
Germ Cell Tumors *115*
Radiotherapy Technique (Brain Tumors) *116*

9. Non-CNS Solid Tumors in Children **122**
Ashutosh Mukherji
Retinoblastoma *122*
Wilms' Tumor *127*
Neuroblastoma *130*
Ewing's Sarcoma *131*
Rhabdomyosarcoma *133*
Childhood Lymphomas *134*
Leukemias *135*
Hepatoblastomas *137*
Langerhans Cell Histiocytosis *138*

10. Genitourinary Cancer **139**
Vikash Kumar, Ashutosh Mukherji
Prostate *139*
Renal Cell Carcinoma *143*
Urinary Bladder Cancers *144*
Urethral Cancers *149*
Penile Carcinomas *153*

11. Thyroid Malignancies **159**
Kanika Sharma
Role of Radiotherapy *159*
Assessment of Tumor *159*
Target Delineation *159*
Tumor Extending to Superior Mediastinum *160*

12. Irradiation of Blood Products and Spleen 162
Ashutosh Mukherji
Rationale of Irradiation of Blood Products *162*
Dose Recommendations and Technique *163*
Effect of Irradiation on Blood Components *164*
Splenic Irradiation *165*

13. Palliative Radiotherapy 166
Vikash Kumar
Bone Metastasis *166*
Brain Metastasis *167*
Lung Metastasis *168*

14. Reirradiation 171
Ashutosh Mukherji
Head and Neck Cancers *172*
Breast Cancer *174*
Lung Cancer *175*
Brain Tumors and Metastases to Brain and Spinal Cord *176*
Bone Metastases *178*
Rectal Cancers *178*
Gynecological Cancers *179*
Soft Tissue Sarcomas *180*

15. Magna Field Radiotherapy 182
Ashutosh Mukherji
Total Body Irradiation *182*
Hemibody Irradiation *192*
Total Scalp Irradiation *193*
Total Limb Irradiation *194*
Total Skin Irradiation *195*

16. Bone and Soft Tissue Tumors **197**
Kanika Sharma
Bone Tumors *197*
Soft Tissue Sarcomas *199*

17. Radiotherapy of Nonmalignant Diseases **202**
Ashutosh Mukherji
Meningiomas *202*
Pituitary Adenomas *203*
Juvenile Nasopharyngeal Angiofibroma *205*
Choroidal Hemangioma *206*
Endocrine Orbitopathy (Graves' Disease) *207*
Diseases of Tendons and Joints *208*
Morbus Peyronie *210*

18. Emergency Radiotherapy **212**
Kanika Sharma
Superior Vena Cava Obstruction *212*
Malignant Spinal Cord Compression *213*
Bone Metastases *216*
Brain Metastases *218*
Bleeding or Pain from Advanced Malignancies *219*

19. Radiation Therapy: Accompaniments and their Management **221**
Indu Bansal
Radiation Dermatitis *222*
Mucositis *223*
Esophagitis *225*
Xerostomia (Dry Mouth) *226*
Nausea and Vomiting *227*

Changes in Smell or Taste *228*
Anorexia *228*
Diarrhea *229*
Urinary and Bladder Changes *230*
Hair Loss *231*
Fatigue *232*
Sexual and Fertility Changes *233*
Low Blood Counts (Myelosuppression) *234*
Radiation Pneumonitis *234*
Late Side Effects *235*

20. Teletherapy Machines and Other Instruments 243
Kanika Sharma
Linear Accelerator *243*
CyberKnife *249*
Gamma Knife *249*
Telecobalt Machine *250*
Cyclotron *253*
Synchrocyclotron/Synchrotron *254*
Betatron *254*
Transformer Units *255*
Van de Graaff Generator *255*
Radioisotopes *257*
Instruments *261*

Index *275*